Amendments to the Claims:

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

Claim 1. (Currently Amended) An optical sensor comprising a launch waveguide and at least two sensing regions located proximate to each other

wherein one of the sensing regions is a pressure sensing region ~~and comprises~~ having a first and a second reflecting surface, wherein the distance between the first and second reflecting surfaces changes in response to a change in pressure, and wherein a first reflected light and a second reflected light from said reflecting surfaces form an interferometric signal representative of a pressure at the location of the optical sensor, and wherein the reflected lights have substantially the same wavelengths as the original incident light,

wherein the other sensing region is a temperature sensing region substantially insensitive to pressure, and

wherein the launch waveguide is connected to a housing and when the housing is exposed to a pressure at a predetermined downhole location in an oil or gas well, and the exposure to the downhole pressure changes the dimensions of at least a portion of the housing to change the distance between the first and second reflecting surfaces, such that the pressure and temperature can be measured.

Claims 2-54 (Canceled)

Claim 55. (Previously Presented) The optical sensor of claim 1, wherein the launch waveguide is operatively connected to the housing and projects light into the housing.

Claim 56. (Previously Presented) The optical sensor of claim 55, wherein the housing is defined by the launch waveguide and one of the following:

a) a hollow tube and a distal member, wherein the tube is connected to the launch waveguide and the distal member wherein the hollow tube and the distal member form the housing,

b) an end cap wherein the end cap forms the housing, or

c) two half-cups wherein the two half-cups form the housing.

Claim 57. (Previously Presented) The optical sensor of claim 56, wherein the distal member is a reflective waveguide, a disk or another end cap.

Claim 58. (Previously Presented) The optical sensor of claim 1, wherein at least one of the two reflecting surfaces is coated with an optical coating.

Claim 59. (Previously Presented) The optical sensor of claim 1, wherein at least one of the two reflecting surfaces is modified.

Claim 60. (Previously Presented) The optical sensor of claim 59, wherein at least one of the two reflecting surfaces forms a lens.

Claim 61. (Previously Presented) The optical sensor of claim 1, wherein said housing comprises a partial vacuum.

Claim 62. (Canceled)

Claim 63. (Previously Presented) The optical sensor of claim 1, wherein the temperature sensing region comprises a third reflecting surface.

Claim 64. (Previously Presented) The optical sensor of claim 63, wherein the second reflected light and a third reflected light from the third reflecting surface form an interferometric signal representative of a temperature at the location of the optical sensor.

Claim 65. (Previously Presented) The optical sensor of claim 63, wherein the temperature sensing region further comprises a fourth reflecting surface and wherein a third reflected light and a fourth reflected light from the third and fourth reflecting surfaces form an interferometric signal representative of a temperature at the location of

the optical sensor.

Claim 66. (Previously Presented) The optical sensor of claim 65, wherein the first and second reflecting surfaces are connected to the third and fourth reflecting surfaces by an optical member.

Claim 67. (Previously Presented) The optical sensor of claim 1, wherein the temperature sensing region is spaced apart from the housing.

Claim 68. (Previously Presented) The optical sensor of claim 1, wherein the temperature sensitive region forms a part of the housing.

Claim 69. (Previously Presented) The optical sensor of claim 64, wherein the second and third reflecting surfaces define a diaphragm and wherein in response to pressure the diaphragm changes the distance between the first and second reflecting surfaces.

Claim 70. (Previously Presented) The optical sensor of claim 1, wherein the housing has a unitary construction and is defined by a tube fused to the launch waveguide and to a capillary tube.

Claim 71. (Previously Presented) The optical sensor of claim 70, wherein the tube and the capillary tube are made from materials having similar coefficient of thermal expansion.

Claim 72. (Previously Presented) The optical sensor of claim 71, wherein the length that the capillary tube extends inside the housing is substantially similar to the length of the housing to compensate for the thermal expansion on the distance between the first and second reflecting surface.

Claim 73. (Previously Presented) The optical sensor of claim 71, wherein the tube and capillary tube are made from fused silica.

Claim 74. (Previously Presented) The optical sensor of claim 73, wherein the temperature sensing region is disposed inside the capillary tube.

Claim 75. (Previously Presented) The optical sensor of claim 70, wherein the capillary tube further comprises a hollow portion to minimize reflected light.

Claim 76. (Previously Presented) The optical sensor of claim 70, wherein the distal end of the capillary tube is modified to minimize reflected light.

Claim 77. (Previously Presented) The optical sensor of claim 1, wherein the launch waveguide is located spaced apart from the housing and projects light into the housing.

Claim 78. (Previously Presented) The optical sensor of claim 77, wherein the distal end of the launch waveguide is angled so that light propagating through the launch waveguide is directed into the housing.

Claim 79. (Previously Presented) The optical sensor of claim 77, wherein light from the launch waveguide propagates through the temperature sensing region before propagating through the housing.

Claim 80. (Canceled)

Claim 81. (Previously Presented) The optical sensor of claim 1, wherein the housing is sealed.

Claim 82. (Previously Presented) The optical sensor of claim 1, wherein at least a portion of the sensor is covered by a coating to reduce moisture or contaminant penetration.

Claim 83. (Previously Presented) The optical sensor of claim 82, wherein said coating comprises xylylene, carbon or titanium oxide.